

Giacomo Mauro D'Ariano

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Giacomo Mauro D'Ariano is full professor of *Quantum Information* and *Quantum Optics* at the University of Pavia. Fellow of the Optical Society of America, Member of the Lombard Academy of Science and Letters, Member of the Center for Photonic Communication and Computing of the Department of Electrical and Computer Engineering of Northwestern University (Evanston IL), with which he regularly collaborates since 1994. In Pavia he created the research group QUIT (Quantum Information Theory), which is scientifically very active at the international level. He conceived and developed the method of quantum homodyne tomography as the first quantitative technique to

determine experimentally the state of radiation, technique now very popular. He then generalized the method to arbitrary quantum system and arbitrary ensemble average, achieving a universal measurement method. He conceived and developed the first experimental technique for the complete quantum characterization of a measuring apparatus or of the transformation of a device. He introduced a novel theoretical method to deal with covariant measurements and transformations, which has recently lead him and his research team to the solution of the long-standing problems of phase-estimation and broadcasting of mixed states of qubits. Recently he proposed an operational axiomatization of Quantum Mechanics, which has received much interest at numerous international conferences. Recently, in collaboration with his disciples G. Chiribella and P. Perinotti, the axiomatization program has been closed with a first derivation of Quantum Theory from information-theoretic principles. In the past, he proposed new optical devices and experimental schemes for high sensitivity measurements, along with new measurements for experimental tests of quantum mechanics, contributing to the new field of Quantum Information with new measuring techniques and novel theoretical approaches to quantum cloning and teleportation. He also largely contributed to theoretical quantum optics, quantum estimation theory, the theory of open systems

and lasers, Monte Carlo simulation methods and group theoretical approaches, with more than 150 invited conferences, seminars, or lecture series, more than 280 publications on refereed international journals and books, and collecting many hundreds of quotations from different authors.

Giacomo Mauro D'Ariano has been national coordinator of four PRIN projects co-funded by the Italian Ministry of University and Research (MURST): "Amplification and Detection of Quantum Information", "Quantum Information Transmission and Processing: Quantum Teleportation and Error Correction", "Entanglement Assisted High Precision Measurements", "Broadcasting of Quantum Information and Cryptography", "Quantum Circuits Architecture" (current project). He has been the local coordinator of the MURST projects PRIN "New Generation of Quantum Measuring Devices for Photon Quantum Information Technology", and FIRB "Novel Quantum measurements by parametric processes", of the european projects ATESIT and COQUIT, of the Advanced Research Project (PRA) of the Italian Institute of the Physics of Matter (INFM) CLON, of the projects PRA CAT and PAIS TWIN of the INFM, and the QUIT group has also joined the european projects EQUIP, QUPRODIS e SECOQC, coordinated locally by his former PhD student Chiara Macchiavello. He has been member of the Steering Committee of the project "Quantum Information Theory and Quantum Computation" of the European Science Foundation, along with of the european Network of Excellence QUIPROCONe.

Giacomo Mauro D'Ariano is well known in the international communities of Quantum Optics and of Quantum Information, he has been member of numerous international scientific committees, chairman in many conferences, Vice-President of the Quantum Communication, Computing, and Measurement International Conference, Co-Chair of the 2nd International ICST Conference on Quantum Communication and Quantum Networking (2011), he has also been principal organizer of large international conferences, including the "Quantum Communication, Computing, and Measurement"(QCM&C) conferences at MIT of Boston 2002 and of Chicago nel 1998, and the workshop of quantum computation held at the Scuola Normale di Pisa in 1997. Past member of the editorial board of Journal of Quantum and Semiclassical Optics, of the Committee of Quantum Optics of the IQEC2000, cochair of the section of Quantum Information del CLEO 2001, member of the Advisor Committee of around twenty international conferences of Quantum Information and Quantum Optics. Referee of Physical Review Letters, Physical Review A, Journal of Physics A,B,D, Physics Letters A, and many other physics journals.

Giacomo Mauro D'Ariano teaches Quantum Optics since 1992, Quantum Information since 2002, and Foundations of Quantum Mechanics since 2006. In the past he also taught Structure of Matter and Solid State Theory. He has tutored more than 26 laurea thesis and 13 PhD thesis, along with many postdocs. Many of his former students occupy now permanent positions at Universities.

Finally, the QUIT group receives many tens of visitors each year. For a updated account of the activities of the group QUIT and recent list of visitors, look at the group website www.qubit.it